

## Gulco Marine Maintenance Superfund Site Comments and Responses

### REMEDIAL INVESTIGATION AND FEASIBILITY STUDY (RI/FS) WORK PLAN

#### General Comments

1. *Comment: As previously stated in comments on the draft Screening Level Ecological Risk Assessment (SLERA), the soils in the area south of Marlin Avenue shall be ecologically evaluated. Proposed sampling and analysis of the southern area shall incorporate the data needs of conducting an ecological evaluation. It is understood that the area is zoned for commercial/industrial land use and will likely remain so. Nevertheless, this area may be a source area for other media that may be presenting an ecological risk and there is some existing ecological habitat that necessitates evaluation. After this evaluation, any decisions made on ecological risk/remediation that include the zoning aspect would be risk management decisions.*

Response: Consistent with the Final Screening Level Ecological Risk Assessment (SLERA) submitted to EPA on November 17, 2005, the RI/FS Work Plan, the FSP, and QAPP will be revised to provide for ecological evaluation of the soils in the area south of Marlin Avenue.

2. *Comment: Although data collected during the Hazard Ranking System (HRS) and screening site inspection (SSI) processes can be included in the risk assessment, this data alone is insufficient to quantify risk. Initial studies such as an SSI, which are used in the preparation of the HRS documentation, are not as detailed in scope as an RI/FS delineation of the nature and extent of contamination. They are used as screening tools to identify those sites that represent the highest priority for further investigation and possible cleanup under the Superfund program. Their purpose is not to fully characterize the source and the extent of the contamination at a site or to define site risks to human health and the environment. This is accomplished during the RI/FS. The data from the initial studies shall not be used to define Site risks, or to rule out chemicals of potential concern.*

Response: The RI/FS Work Plan will be revised to clarify that data collected during the HRS and SSI processes will be included in the risk assessment, when appropriate, but these data will not be used as the sole means to define Site risks or rule out chemicals of potential concern.

3. *Comment: Preliminary data was provided in Tables 2 -11 for soil, groundwater, surface water and sediment. However, only on-site samples were depicted on the Site map in Figure 2. The RI/FS Work Plan (Work Plan) shall be revised to provide a Site map that includes the locations of the off-site and background samples listed in the tables.*

Response: An additional figure will be added to show the locations of the off-site and background samples listed in the tables.

4. *Comment: The conceptual site model (CSM) does not include the surface water pathways (Figure 9) from the freshwater ponds on the northern part of the Site. The current draft CSM does include estuarine surface water pathways; however, the potential exposures do not include ingestion of media (surface water) for birds, carnivorous fish, and mammals, which is a potential pathway. The CSM shall be revised to include this.*

Response: This figure will be revised to reflect the comment for birds and carnivorous fish, but it is suggested that ingestion of surface water by mammals not be included because, given the salinity of the water in the Intracoastal Waterway, it is unlikely that mammals would preferentially ingest this water. During sampling performed by LT Environmental (LTE, 1999), the conductivity of the large pond was measured at 19,960 micro-Siemens (roughly corresponding to a total dissolved solids concentration of 14,000 mg/L) and the conductivity of the small pond was measured at greater than 19,999 micro-Siemens, suggesting that it is unlikely that mammals would preferentially ingest water from these ponds, either. As requested in the February 8, 2006 project meeting, the LTE conductivity data will be added to the Work Plan.

5. *Comment: The Work Plan shall include soil sampling at the residential properties in the proximity of the Site. In addition, sampling of the idle water supply well located adjacent to the Site shall be conducted. These ground water samples shall be analyzed for volatile organic compounds, semi-volatile organic compounds, pesticides, polychlorinated biphenyls, and metals.*

Response: Consistent with the details in Specific Comment No. 6, the residential soil sampling program will be added to Section 5.6.3 of the Work Plan. Sampling of the idle water supply well on Lot 20 (the former commercial marina property) will be added to Section 5.6.5. It should be noted that the idle well has not been secured for many years and the competence of the well casing has not been evaluated. Likewise, it should also be noted that the well is located at the site of a former commercial marina operation and the protection of the well head during marina operations is unknown. As such, groundwater data obtained from this well may not be representative of the water-bearing unit in which the well is indicated to be completed and should not be considered a potential indication of contaminant migration from the Gulfco site.

6. *Comment: The Site hydrogeology described in Section 2.1.2 of the Work Plan indicates that groundwater resources at the Site may warrant designation as Class 1 or Class 2 groundwater under 30 TAC 350.52(1) and (2), respectively. If so, relevant protective concentration levels (PCLs) (e.g.,  $^{GW}Soil_{Ing}$ , and  $^{GW}GW_{Ing}$ ) shall be included in the appropriate Preliminary Screening Value (PSV) tables and used in the chemicals of interest (COI) screening process and other human health related evaluations. Further information concerning the nature of groundwater resources at the Site shall be provided. In cases where a groundwater resource meets the criteria for more than one classification, 30 TAC 353.52 directs that the higher classification be used, unless approved otherwise by the Executive Director. For example, if Class 2 and 3 criteria apply for a groundwater source, the designation should be Class 2.*

Response: Section 2.1.2 will be expanded to include discussion of the uppermost water-bearing unit. As described in Section 2.2.2 of the Work Plan, total dissolved solids (TDS) concentrations in the uppermost water-bearing unit near the former surface impoundments ranged from 34,000 mg/L to 53,000 mg/L in groundwater samples collected in 1982. Based on this information and the typically high salinity of the uppermost water-bearing zone in coastal settings like the Site, it is anticipated that the uppermost water-bearing zone at the Site will be designated as Class 3 groundwater, and thus the  $^{GW}Soil_{Class\ 3}$  and  $^{GW}GW_{Class\ 3}$  PCLs were included in the PSV tables. It is recognized that the existing TDS data may reflect impacts from the nearby former surface impoundments, and consequently TDS analysis is proposed for all monitoring wells in Section 5.6.5. If the results for these analyses suggest a groundwater designation other than Class 3, the PSV used to evaluate Site groundwater data will be adjusted as suggested in this comment.

7. *Comment: The Field Sampling Plan (FSP) and the Quality Control Project Plan (QAPP) shall be revised as appropriate to incorporate the comments regarding the RI/FS Workplan.*

Response: The FSP and QAPP will be revised as appropriate to incorporate the comments regarding the RI/FS Work Plan.

8. Comment: *Screening out chemicals of potential concern based on background locations not approved for ecological and human health risk assessment purposes is inappropriate. According to EPA policy (2001), "comparison with background levels generally cannot be used to remove contaminants of concern owing to the need to fully characterize site risk."*

Response: It appears that this comment may be confusing the investigational objective of evaluating the Site related to background to determine extent of contamination (EPA, 2002) with the risk assessment objective of evaluating both site-related contaminants and naturally-occurring compounds. We expect to carry all compounds measured above the analytical detection limit as described in EPA guidance (EPA, 1989, 1997, and 2001) through the risk assessment process and will discuss their concentrations and risks separately and in addition to "background" risks. We believe, however that in a step-wise investigation where additional areas or media are sampled based on results of comparison to screening criteria, it seems overly arduous to continue analyzing for compounds that are not present above screening levels and/or background. Delineation of the extent of contamination to levels below background is counter to our understanding of RI/FS guidance and our experience with the RI/FS process. We will revise the Work Plan text to clarify that background comparisons will not be used to screen out contaminants from the risk assessment.

9. Comment: *Texas Risk Reduction Program (TRRP) exposure factors for use in the human health risk assessment (HHRA) may be found in 30 TAC 350.74(a). Toxicity values, Protective Concentration Levels (PCLs) for affected media and other data relevant to the HHRA are available at <http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html>*

Response: This information will be used in the HHRA as appropriate.

10. Comment: *The Work Plan does not provide for obtaining additional data (i.e., toxicity tests and ecological tissue samples) for the ecological risk assessment regarding sediments. The sediment sampling data to be obtained under this Work Plan shall be compared to the ecological sediment screening values (i.e., the lowest of either the TCEQ Ecological Benchmark for Sediment, or the EPA EcoTox Threshold). Should any sediment sample exceed an ecological screening value, or any bioaccumulative chemical be detected above its sample quantitation limit, then the following testing shall be conducted:*

- a. *Sediment toxicity testing shall be conducted at six (6) locations distributed over the wetlands area in the Site vicinity (both on and off-site), with a bias based on the drainage pathways from the Site and including sample locations distributed along the surface water flow gradient. A map showing the proposed sediment toxicity testing locations shall be submitted to EPA for approval. Analysis shall be conducted for any chemicals that exceed their sediment ecological screening levels, any detected bioaccumulative chemicals, or all frequently detected (i.e., detected in more than 50% of the soil or ground water samples at the Site). For salt water, ampelesca shall be used. For fresh water (if present) hyallela azteca shall be used. In addition, co-located sediment samples shall be collected at the same time and analyzed for the full suite of chemicals that are being evaluated in the toxicity test, including tri-butyl-tin.*
- b. *Ecological biological tissue testing shall be conducted for any chemicals that exceed*

*their sediment ecological screening levels, any detected bioaccumulative chemicals, and all frequently detected chemicals (i.e., detected in more than 50% of the soil or ground water samples) except volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs).*

- (i) *For the wetland areas in the vicinity of the Site, nine (9) biological tissue samples shall be collected from locations distributed over the wetlands, with a bias based on the drainage pathways from the Site and including sample locations distributed along the surface water flow gradient. Each sample shall be a composite sample of fiddler crabs.*
- (ii) *For the barge slips or Intracoastal Waterway, six (6) forage fish (i.e., mullet, or fundulus, as available), whole body samples of the same species, shall be collected. Two samples of each species shall be collected from each barge slip, and two from the Intracoastal Waterway.*

**Response:** As noted in the Final SLERA and in Section 5.7.2 of the Work Plan: "... the SLERA and the resulting SMDP will be re-evaluated after a more complete database of soil and sediment samples collected during the RI has been developed. Steps 3 and possibly up through 7 of the ERA process, as described above, will be conducted if the updated SLERA indicates that further ecological evaluation is necessary." Consistent with EPA guidance (EPA, 1997) and the UAO (SOW Paragraph 37.d), these steps include the collection of additional ecological data, such as toxicity testing or ecological tissue samples, if the ERA process deems those data necessary to complete the evaluation.

Based on discussions in and following the February 8, 2006 project meeting, we will modify Section 5.7.2 to include additional details regarding Ecological Problem Formulation (Step 3), the Ecological Study Design (Step 4) and Field Verification (Step 5). Projected dates for these contingent activities and associated deliverables (e.g., the Ecological Problem Formulation Report (draft and final), and Ecological Studies Sampling Work Plan (draft and final)) will be added to the project schedule in Figure 11. Section 5.6.9 of the Work Plan will be modified to indicate that a draft and final Nature and Extent Data Report (NEDR) will be submitted for EPA review and approval upon completion of Site nature and extent evaluation activities (i.e., soil, groundwater, sediment and surface water sampling). This deliverable will also be added to Figure 11. Similar to the PSCR, the NEDR will describe the investigative activities that have taken place, and will provide Site data documenting the location and characteristics of surface and subsurface features and contamination at the Site including the affected medium, location, types, physical state, and concentration and quantity of contaminants. The PSCR will be submitted for EPA review and approval following completion of sampling activities described in the Ecological Studies Sampling Plan. The PSCR will be intended to supplement the NEDR, and as such will not contain data previously submitted in the NEDR.

11. *Comment: The Work Plan does not provide for obtaining additional data (i.e., toxicity tests and ecological tissue samples) for the ecological risk assessment regarding soils. The soil sampling data from the 0 to 6-inch interval to be obtained under this Work Plan shall be compared to the ecological soil screening values (i.e., the lowest of either the TCEQ Ecological Benchmark for Soil, or the EPA EcoTox Threshold). Should any such soil sample exceed an ecological screening value, or any bioaccumulative chemical be detected above its sample quantitation limit, then the following testing shall be conducted:*
  - a. *Soil toxicity testing shall be conducted at six (6) locations distributed over the Site. A map showing the proposed soil toxicity testing locations shall be submitted to EPA for*

*approval. Analysis shall be conducted for any chemicals that exceed their soil ecological screening levels and any detected bioaccumulative chemicals. Earthworm toxicity testing shall be used. In addition, co-located soil samples shall be collected at the same time and analyzed for the full suite of chemicals that are being evaluated in the toxicity test.*

- b. Ecological biological tissue testing shall be conducted for any chemicals that exceed their soil ecological screening levels and any detected bioaccumulative chemicals. Eight (8) biological tissue samples of cotton rat (symodon), or other similar representative herbivore if sufficient cotton rat population is not present, and eight (8) biological tissue samples of shrews, or other similar representative insectivore if sufficient shrew population is not present, shall be collected from locations distributed over the Site where terrestrial habitat is present.*

**Response:** As noted in the Final SLERA and in Section 5.7.2 of the Work Plan: "... the SLERA and the resulting SMDP will be re-evaluated after a more complete database of soil and sediment samples collected during the RI has been developed. Steps 3 and possibly up through 7 of the ERA process, as described above, will be conducted if the updated SLERA indicates that further ecological evaluation is necessary." Consistent with EPA guidance (EPA, 1997) and the UAO (SOW Paragraph 37.d), these steps include the collection of additional ecological data, such as toxicity testing or ecological tissue samples, if the ERA process deems those data necessary to complete the evaluation.

Based on discussions in and following the February 8, 2006 project meeting, we will modify Section 5.7.2 to include additional details regarding Ecological Problem Formulation (Step 3), the Ecological Study Design (Step 4) and Field Verification (Step 5). Projected dates for these contingent activities and associated deliverables (e.g., the Ecological Problem Formulation Report (draft and final), and Ecological Studies Sampling Work Plan (draft and final)) will be added to the project schedule in Figure 11. Section 5.6.9 of the Work Plan will be modified to indicate that a draft and final Nature and Extent Data Report (NEDR) will be submitted for EPA review and approval upon completion of Site nature and extent evaluation activities (i.e., soil, groundwater, sediment and surface water sampling). This deliverable will also be added to Figure 11. Similar to the PSCR, the NEDR will describe the investigative activities that have taken place, and will provide Site data documenting the location and characteristics of surface and subsurface features and contamination at the Site including the affected medium, location, types, physical state, and concentration and quantity of contaminants. The PSCR will be submitted for EPA review and approval following completion of sampling activities described in the Ecological Studies Sampling Plan. The PSCR will be intended to supplement the NEDR, and as such will not contain data previously submitted in the NEDR.

### **Specific Comments**

1. *Comment (Section 3.3, page 17-18, and Figure 8): The conceptual site model for the southern portion of the Site does not include ecological receptors. The Work Plan shall be revised to add ecological receptors and all appropriate exposure pathways. Reptiles shall be identified as potential measurement receptors in models for both the northern and southern areas and evaluated.*

**Response:** Consistent with the Final SLERA, Section 3.3 and the indicated figure in the Work Plan will be revised to include ecological receptors in the South Area and appropriate exposure pathways for these receptors. Reptiles will be added as potential measurement receptors to this figure.

2. *Comment (Section 3.3, page 17): There is agreement that the area to the north of Marlin Road is not utilized to the same extent that the area South of Marlin Road. However, a trespasser only scenario for the area North of Marlin road is not appropriate. The industrial worker scenario/construction scenario shall still be used in this area because the use of this land should also address potential future exposure scenarios.*

**Response:** An industrial exposure scenario will be included for the area north of Marlin Avenue.

3. *Comment (Section 5.6 and subsections, pages 25-37): The intended use of background samples is not clear, but screening-out chemicals as chemicals of potential ecological concern (COPECs) based on a comparison to background is inappropriate. Also, the criteria used to select background locations shall be provided.*

**Response:** In no cases, will the background samples be used to screen out chemicals of potential ecological concern. The intended use of background samples is to define the lateral extent of contamination in Site media. For example, Section 5.6.3 notes: "These PSV comparisons are subject to adjustment based on background concentrations (i.e., values below background will not be considered exceedences)." Subsection i. of Section 5.6.3 then describes the delineation process for those samples and COIs that exceed PSVs. Similar discussions are included in Section 5.6.5 for groundwater, Section 5.6.6 for surface water, and Section 5.6.7 for sediment. As described in Section 5.6.8, background sediment concentrations will also be used for developing the analyte list for human health fish tissue sampling program. This use of background samples is discussed further in Specific Comment No. 17, below.

The criteria used to select background locations will be based on applicable guidance provided in EPA, 2002, and EPA, 1995. Although these documents specifically address soil and/or sediment background issues, the concepts for selection of anthropogenic background samples (samples from similar depths, sample locations unaffected by Site activities, etc.) can be generally applied to surface water and groundwater. This discussion of the criteria to be used to select background locations will be added to the appropriate subsections of Sections 5.6.3 (subsection h.), 5.6.5 (subsection f.), 5.6.6 (subsection d.), and 5.6.7 (subsection d.). Should background soil samples be collected, the proposed background soil sample area is shown on Figure 1. Nine soil samples will be collected on a grid within this area, with the condition that visibly disturbed areas associated with other industrial operations will not be sampled. Background groundwater sample locations will be proposed to EPA at the time the need for collection of those samples is indicated.

4. *Comment (Section 5.6.3.a, page 28): The soil sampling program provides for sampling the surface to two-foot interval, but does not include provisions for determining the vertical extent of soil contamination. The TRRP defines surface soil for industrial property as the soil column from 0 to 5-feet below ground surface (bgs). Therefore, sampling of only the top two feet of the soil column may not provide a data set that is adequate to demonstrate health protectiveness under TRRP. The Work Plan shall be revised to collect additional soil samples below 2-feet if the 1-foot to 2-foot sample exceeds the screening levels, to a maximum depth of 5-feet bgs, and if the water table has not been reached. Also, in case offsite sampling is required to delineate contamination to residential PCLs, 0 to 15-feet bgs is considered to be surface soil for properties classified as residential under TRRP.*



Response: Section 5.6.3.i will be revised to include a statement indicating that should a soil sample location from the 1-foot to 2-foot depth interval exceed a PSV, then additional deeper soil samples will be collected to the water table or a maximum depth of 5 feet below grade.

5. *Comment (Section 5.6.3.b, page 28): The Work Plan states that soil samples will not be collected from grid based locations falling within the wetland areas shown on Figure 3. Instead, sediment samples would be collected from these locations. All of the wetland areas shown on Figure 3 may not be wet. The Work Plan shall be revised to collect soil samples, at both depths, at these locations unless it is obviously observed to be a wet area. In that case, a sediment sample shall be collected at that location. Further, no 12-inch to 24-inch soil sample will be required if that depth is found to be wet.*

Response: We appreciate and share the objective of this comment, namely that soils should be sampled as soils and sediment should be sampled as sediment. We are concerned, however, that the determination as to whether a specific sample location is “observed to be a wet area” will vary depending on the month of the sampling event, weather conditions immediately preceding a sampling event, and possibly even tidal or storm surge conditions at the time of sampling. This potential temporal inconsistency could lead to considerable confusion in comparing sample data as the sample type and the PSV criteria will essentially be determined by the time of sampling. Furthermore, consider the situation where a soil sample is collected during an initial sampling event and as a result of a soil PSV exceedence, as described in Specific Comment No. 4 above, sampling from a greater depth is required to define the vertical extent. If the sample location is “observed to be a wet area” during the resampling event, the deeper sample would be designated a sediment sample and would be compared to sediment PSVs. To avoid these difficulties and to maintain consistency with other programs, we suggest it is more appropriate to base the designation of soil and sediment samples on the consistent standard provided by the US Fish and Wildlife Service wetland mapping program, which is depicted for the Site vicinity in Figure 3.

6. *Comment (Section 5.6.3, page 25): The Work Plan does not provide for surface soil sampling for metals analysis on the off-site properties to the west. The Work Plan shall be revised to provide for this. Samples shall be collected from Lot 19 and Lot 20 from the shallow soil (i.e., depth interval 0 to 1-inch) on a 100-foot grid spacing with random locations within each grid. These samples shall be analyzed for metals that were found to exceed either the human health or the ecological screening levels, whichever is lower, within any soil sample from Lot 21, Lot 22, and Lot 23 of the Site. Samples shall also be collected from the residential properties further west, on the west side of Snapper Lane, subject to acquisition of appropriate access agreements. For the residential properties west of Snapper Lane, a five-point composite sample shall be collected from the front yard of the property, a five-point composite sample shall be collected from the back yard, and a four-point composite sample shall be collected from the drip zone near the mid-point of each side of the residence on the property (for those properties containing a residence) in accordance with guidance in the EPA Superfund Lead-Contaminated Residential Sites Handbook (EPA, 2003). Composite samples shall also be collected from any distinct play areas and gardens present on the residential properties to be sampled. Should any of the residential properties exceed the residential human health screening values for soil, then additional residential properties shall be sampled until the extent of contamination is established.*

Response: Section 5.6.3 will be revised to include the wording in this comment with the three minor clarifications. First, as discussed previously with EPA, it is suggested that the 100-foot grid surface (i.e., 0-1 inch depth interval) sampling program for Lot 21 originally proposed in the Work Plan be revised to consist of three biased locations near the sand blasting locations and seven locations along the former dust control screen along the western boundary of Lot 21

(approximate sample spacing of 100 feet). These proposed locations are shown on the attached Figure 2, which will be added to the Work Plan.

Second, per discussions in the February 8, 2006 meeting, the PSV comparisons for the Lot 21, 22 and 23 samples described in this comment will include the following three clarifications: (1) they pertain to surface (i.e., 0-1 inch depth interval) samples only; (2) they include adjustment for background as described for other PSV comparisons; and (3) they be limited to human health-based criteria. The rationale for excluding ecological criteria from this evaluation is based on the fact that the objective of this program is to evaluate potential human health risks, and the fact that the comparison to ecological criteria is already included in the overall grid-based soil sampling program for the Site.

Third, we suggest that this residential program be performed in two steps. As discussed in the February 8, 2006 project meeting, samples would initially be collected from Lots 19 and 20 with the analyte list for these samples developed based on the PSV comparisons for Lots 21, 22 and 23 data. Samples will then be collected from the residential properties on the west side of Snapper Lane (approximately seven properties) with the analyte list for these samples developed based on PSV comparisons to the Lot 19 and 20 samples. If there are no PSV exceedences in a given step, then the subsequent step would not be performed. Additional residential properties will be sampled if any of the residential properties on the west side of Snapper Lane exceed the residential human health screening values for soil subject to the background adjustment described previously and the condition that the exceedence is attributable to the Gulfco site. As an example of the latter consideration, we would suggest that an isolated lead exceedence on a single property west of Snapper Lane absent any lead exceedences on Lots 19 and 20 should not trigger additional residential property sampling, as this exceedence could more likely be attributable to lead-based paint at the residence than historical operations at the Gulfco site. This consideration is consistent with EPA Guidance (EPA, 2003), which describes the process for evaluating drip zone samples separately since they may be an indicator of the presence of lead-based paint.

7. *Comment (Section 5.6.3.g, page 29): The sentence "Ecological screening levels will not be used for the South Area per previous EPA technical discussions and because the industrial nature of the property does not provide suitable habitat" shall be deleted since the southern area does provide habitat, and ecological screening values shall be included for the southern area.*

Response: This sentence will be deleted from Section 5.6.3.g.

8. *Comment (Section 5.6.3.g, page 29): Utilization of TCEQ ecological screening benchmarks for soil shall include the most recent updates, as was indicated for surface water and sediment samples.*

Response: The reference in this section will be revised to "TNRCC, 2001 and updates", as was provided for surface water and sediment.

9. *Comment (Section 5.6.3.g, page 29): Any constituents detected will be carried forward into the baseline risk assessment regardless of how it compares to the background value. It is EPA's policy to address background issues in the Baseline Risk Assessment rather than remove the constituent in the risk screening phase.*

Response: As noted in the response to Specific Comment No. 3 above, the intended use of background samples is to define the lateral extent of contamination in Site media. Comparisons to background will not be used to eliminate constituents from evaluation in the



risk assessment.

10. *Comment (Section 5.6.5, page 30): Evaluation of potential risks associated with ground water shall include the groundwater-to-sediment pathway as well as the described pathways. It shall be stated within the text if the groundwater-to-sediment pathway is being addressed as a component of the groundwater-to-surface water pathway, which is included in the text. All potential contaminant transport mechanisms must be thoroughly evaluated to determine if a complete pathway exists prior to elimination from ecological consideration.*

Response: The introductory paragraph in Section 5.6.5 will be revised to include "... (3) groundwater or NAPL migration to surface water/sediment". This wording is consistent with the identification of the groundwater to surface/water sediments pathway in the conceptual site model diagrams shown on Figures 7 and 8.

11. *Comment (Section 5.6.5, page 30-31): The Work Plan proposes four permanent ground water monitoring wells on the perimeter of the former surface impoundment area. This spacing leaves large gaps in the former impoundment area, where the presence of dense non-aqueous phase liquids (DNAPL) is likely. Four additional ground water locations shall be sampled around the perimeter of the former impoundment, either with direct push methods or monitoring wells.*

Response: This section will be revised to include four additional groundwater monitoring locations near the corners of the former surface impoundment area.

12. *Comment (Section 5.6.5, page 30-31): The Work Plan does not include ground water sampling locations southwest of the dry dock area, and between Slip No. 2 and the former septic take area. Two additional ground water locations shall be sampled, one each in the referenced areas, either with direct push methods or monitoring wells.*

Response: This section will be revised to include two additional groundwater monitoring locations where indicated.

13. *Comment (Section 5.6.5.d, page 31): The proposed analyte list for ground water samples is listed in Table 12 for each potential source area. Some of these areas do not include the full analyte list. All ground water samples shall be analyzed for the full analyte list, including VOCs, SVOCs, pesticides, PCBs, and metals.*

Response: This section will be revised to indicate that all groundwater samples will be analyzed for the full analyte list (VOCs, SVOCs, pesticides, PCBs, and metals).

14. *Comment (Section 5.6.5.g, page 32): The Work Plan includes provisions for determining the horizontal extent of ground water contamination, but does not include steps for determining the vertical extent. The next ground water zone below the uppermost water bearing zone shall be sampled for the chemicals that exceed the ground water screens in the uppermost water bearing zone. A minimum of three ground water samples shall be obtained from this next water bearing zone, and additional samples as necessary to determine extent. Each deeper water-bearing zone shall be sampled until the ground water screens are not exceeded. The samples may be obtained either by direct push methods or monitoring wells. These samples shall be obtained outside of any DNAPL zone.*

Response: This section will be revised to include the indicated provisions for evaluating the

vertical extent of groundwater contamination with one clarification. We suggest that ecological-based screening criteria not be included in the PSV comparisons for groundwater samples for the deeper water-bearing zones if it can be shown that groundwater from these units is unlikely to discharge to surface water or sediments.

15. *Comment (Section 5.6.5.i, page 33): Site water level data and hydraulic testing shall be performed on any deeper water bearing zones that are found to contain contaminant concentrations above the ground water screening levels. This information shall be used to determine the ground water flow rate and direction for each water-bearing zone.*

Response: This section will be revised to include collection of the indicated data for a deeper water-bearing unit found to contain contaminant concentrations above PSVs.

16. *Comment (Section 5.6.6, page 33): The only surface water samples to be taken are from the northern area. Both human and ecological receptors will come into contact with the surface water on the southern portion of the Site. Surface water samples shall be taken at locations co-located with sediment samples taken in the slips and the Intracoastal Waterway (ICWW).*

Response: As discussed in the February 8, 2006 project meeting, one composite surface water sample will be collected from each of the four zones within the ICWW adjacent to the Site as shown on Figure 9 in the FSP. Each composite will consist of three sub-samples collected using tubing and a peristaltic pump. One sub-sample will be collected from approximately one foot below the water surface, the second sub-sample will be collected from mid-depth of the water column, and the third sub-sample will be collected from approximately one foot above the base of the water column. Background surface water samples will be collected in a similar manner.

17. *Comment (Section 5.6.8, page 36): The Work Plan states that fish tissue will be sampled for sediment samples above the sample quantitation limit (SQL). This is acceptable only if the SQL is low enough to be compared to the appropriate screening values. Additionally, a comparison to background concentration levels shall not be used to justify the removal of potential constituents of concern in fish tissue. Background considerations can be addressed when a complete data set is available. The recommended background collection site does not appear to be reflective of background levels in the general area because the proposed collection location is at another barge docking site. The location of the background samples shall be such that it is reflective of background levels in the area.*

Response: As proposed in Section 5.6.8, fish tissue samples will be analyzed for those chemicals detected in sediment samples above the SQL and above background sediment concentrations. In response to the first part of this comment, the wording to this section will be revised to indicate that the SQL comparison will only be valid if the SQL is below the sediment PSV (in other words, chemicals for which the SQL in sediment samples exceeds the sediment PSV will be included in the fish tissue analyte list).

With regard to the second part of this comment, it should be noted comparisons to background in this section refer only to those sediment comparisons used to help to develop the analyte list for fish tissue samples. Consistent with other comments and responses regarding background, fish tissue sample data will not be compared to background fish tissue sample data for the purposes of removing potential constituents from evaluation in the risk assessment.

With regard to the third part of this comment, the proposed background sample location corresponds to the location of background sediment SE-15 collected by TNRCC during the

January 2000 SSI sampling event (see attached Figure 5 to be added to the Work Plan). The proposed location is not a barge docking site, but rather a Brazoria County public boat ramp. Although we believe that inclusion of a public boat ramp within the sampling interval is entirely consistent with the definition of anthropogenic background provided in EPA guidance, particularly given the presence of such features at numerous locations along the ICWW, the sediment/surface water/fish tissue background sample area will be relocated approximately 500 feet to the southwest, so that the entrance to the public boat ramp is not included within the background area.

18. *Comment (Section 5.6.8, page 36): The Work Plan states that J-flagged data will not be considered in the evaluation of Site related contaminants in fish tissue. Given that J-flagged data may provide a certain level of useful information for risk estimation, notwithstanding the accompanying uncertainty, this data shall be used. Reporting of all analytical data and associated information is required under TRRP (30 TAC 350.54(h)).*

Response: Based on the comment, it appears that the discussion regarding the use of J-flagged data in this section was not clear. The intent of the Work Plan was that J-flagged sediment concentration data below the SQL would not be used to develop the analyte list for subsequent fish tissue samples. Any background sediment data that are J-flagged due to a low bias (analyzed out of holding time, for example) will be considered in development of the fish tissue analyte list. Consistent with applicable EPA and TCEQ guidance, J-flagged sediment and fish tissue data will be used in the risk assessment. Likewise, all J-flagged data and associated data will be reported and used in risk assessments and risk management decision-making.

19. *Comment (Section 5.6.8, page 37): The Work Plan proposes to include the fish and crab data in the RI Report and not in the Preliminary Site Characterization Report (PSCR). The fish and crab data shall be included in the PSCR Report since its purpose is to "describe the investigative activities" and provide a "preliminary reference for developing the Baseline Human Health and Ecological Risk Assessments."*

Response: The Work Plan will be revised to indicate that fish and crab data will be included in the PSCR.

20. *Comment (Section 5.7.1, page 40): The Work Plan proposes to collect background fish samples if the estimated risks, based on fish tissue sampling, exceed EPA's target risk range of 1-in-1,000,000 to 1-in-10,000. A risk within the target risk range may have a significant impact on the Site risks, and without background information it would not be possible to determine whether the contamination is Site related or not. The Work Plan shall be revised to provide for background fish sample collection if the estimated risks exceed 1-in-1,000,000.*

Response: The Work Plan will be revised as indicated.

21. *Comment (Section 5.7.2, pages 42-43): The Work Plan proposes a limited number of COPECs for the SLERA. Given the very limited amount of sampling information from this Site, the subsequent inability to develop representative concentrations, and the high quantitation limits compared to the screening levels, it is premature to screen out any chemicals as COPECs without enough samples to adequately characterize the nature and extent of contamination. A thorough delineation of contamination in all media at the Site shall be completed before COPECs can be eliminated from the SLERA. Also, previous SLERA comments on the inappropriateness of using SSI data to perform the risk assessment apply.*

Response: As discussed in the responses to the SLERA comments and reflected in the Final SLERA, no COPECs will be screened out based on the existing data. Section 5.7.2 will be revised to reflect this correction. Consistent with previous SLERA comments/responses and the Final SLERA, and based on EPA guidance (*Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. EPA Region 4*, originally published November 1995, Website version last updated May 2000: <http://www.epa.gov/region4/waste/oftecser/healthbul.htm>), it is proposed that the essential nutrients calcium, magnesium, potassium, and sodium be eliminated as COPECs.

22. *Comment (Table 12): The welding area encompasses a large area with potentially multiple historic uses. This area shall be characterized with the full list of COPCs (i.e., VOCs, SVOCs, pesticides, PCBs, and metals) to account for uncertainty. If there is a smaller area associated with welding, it may be appropriate analyzed for metals and VOCs in this smaller area.*

Response: Table 12 will be revised to show VOCs, SVOCs, pesticides, PCBs, and metals as chemicals of interest for this PSA.

23. *Comment (Table 12): The former gasoline storage tank area soil sample location is the only one located in its sample grid block. That being the case, this soil sample shall be analyzed for the full analyte list, including VOCs, SVOCs, pesticides, PCBs, and metals.*

Response: Table 12 will be revised to show VOCs, SVOCs, pesticides, PCBs, and metals as chemicals of interest for this PSA.

24. *Comment (Table 13): Table 13 shall be revised to provide for the ecological evaluation of the southern portion of the Site.*

Response: Based on discussions in the February 8, 2006 meeting, a footnote will be added to this table indicating that data needs associated with ecological pathways will be identified in the Ecological Problem Formulation document described in Section 5.7.2 of the Work Plan.

25. *Comment (Table 14): Table 14 shall be revised to include the projected surface water and sediment samples from the northern and southern areas in order to be consistent with the text in earlier sections.*

Response: Table 14 was intended to include those samples associated with specific source areas. Since surface water and sediment samples are not typically tied to a specific source area, but will be collected to assess potential contaminant transport from multiple source areas, they were not listed in this table. To address this comment, it is suggested that a footnote be added to this table incorporating this explanation.

26. *Comment (Tables 15-17): Tables 15 through 17 include industrial PCLs as potential Preliminary Screening Values (PSVs). However, 30 TAC 350.71(k) directs that residential PCLs be used for screening the contaminants at a site. The guidance document TRRP 14: Screening Target Chemicals of Concern from PCL Development describes the screening procedures under TRRP; this and other guidance documents are available at: <http://www.tceq.slate.tx.us/rernediation/trrpltrrppcls.html>. Any site specific scenarios are incorporated in the Baseline Risk Assessment rather than in the screening phase of the risk assessment.*

**Response:** The PSVs in Tables 15 through 17 were developed for commercial/industrial land use based on discussions in the August 4, 2005 Scoping Phase meeting, the October 20, 2005 Availability Session and a meeting with EPA on May 17, 2005. As discussed in a meeting with TCEQ personnel on February 15, 2006, we propose that this comment be addressed as follows. The PCLs in Tables 15 through 17 in the Work Plan will not be changed, but two new PSV tables will be added. The first new table will list residential soil PCLs (including the  $^{Tot}Soil_{Comb}$ ,  $^{GW}Soil_{Class\ 3}$  (or  $^{GW}Soil_{Ing}$  as appropriate),  $^{Air}Soil_{Inh-v}$ , and  $^{Air}GW-Soil_{Inh-v}$  PCLs) as PSVs. This table will be used for the PSV comparisons made in conjunction with the residential soil sampling program described in Work Plan Specific Comment No. 6 above. All other soil PSV comparisons (including soil samples collected from the South Area since ecological pathways will now be considered for this area) will be made relative to the current Table 15 in the Work Plan. The second new table will list residential groundwater PCLs (including the  $^{GW}GW_{Ing}$  and  $^{Air}GW_{Inh-v}$  PCLs) as PSVs. This table will be used for PSV comparisons for potable groundwater-bearing units, consistent with Work Plan Specific Comment No. 30 above. Groundwater comparisons for non-potable water-bearing units will be made relative to existing Table 17, subject to the adjustments for groundwater classification as indicated in Work Plan Specific Comment No. 6 and its associated response.

27. *Comment (Tables 15-17): In some cases, the lowest, most conservative screening concentration for a given COI is not identified as the PSV in Tables 15 and 16 (e.g., antimony and endrin in Table 16). Also, some of TCEQ's published PCLs appear to be missing from Tables 15 through 17 and 19 (e.g., thallium, dichloroethylene and  $\gamma$ -chlordane). These tables shall be checked for accuracy and revised to include the lowest, most conservative screening concentration for all COIs, and shall be revised to include all of TCEQ's published PCLs, available in the Tier 1 PCL tables at: <http://hwvsnv.tceq.state.tx.us/remediation/trrp/pcls.html>.*

**Response:** These tables will be checked and revised where needed.

28. *Comment (Table 16): The table does not include the ecological soil screening values for the southern part of the Site. These screening values shall be added to the Table 16 to make it consistent with Table 15.*

**Response:** With the aforementioned change to consider ecological receptors in the South area, Tables 15 and 16 will become identical. Consequently, Table 16 will be deleted and Table 15 will be re-titled as "Preliminary Screening Values – Soils".

29. *Comment (Table 17): This table does not include a water ecological benchmark for PCBs, yet Table 3-2, Ecological Benchmarks for Water (TCEQ), includes a benchmark for PCBs and Arochlors. The marine benchmark for PCBs is 0.00003 mg/L. Table 17 shall be revised to include this benchmark.*

**Response:** The indicated ecological benchmark will be added to this table.

30. *Comment (Table 17): The maximum contaminant level (MCL), or an alternate drinking water screening value, shall be included as a potential preliminary screening value for ground water. Even though the uppermost ground water is salty, fresh ground water is known to exist at about 200-feet bgs, and may exist at shallower depths. Depending on the vertical extent of the ground water contamination, a drinking water zone may be impacted.*

**Response:** This comment appears to contradict Specific Comment No. 6, which indicates that the groundwater PSV should be based on the classification for the water-bearing unit being

evaluated. We concur that MCLs should be used for potable water-bearing units, but believe that applying MCLs to non-potable units is not appropriate. Based on discussions in the February 8, 2006 meeting, the Work Plan will be revised to indicate that MCLs will be used as PSVs for potable ground-water bearing units.

31. *Comment (Table 18): Table 18 includes only the TCEQ Ecological Benchmark for Water as a potential PSV. Human exposures to affected surface water shall also be considered by inclusion of the Surface Water Risk Based Exposure Level (SWRBEL) in the table. SWRBELs are available at: <http://www.tceq.state.tx.us/rcmediationltrp/trrppcls.htm>. The table shall also include the Texas Surface Water Quality Standards.*

Response: The SWRBELs will be added to Table 18. The Texas Surface Water Quality Standards will be added where appropriate.

32. *Comment (Table 19): This table does not include a sediment ecological benchmark for PCBs, yet Table 3-3, Ecological Benchmarks for Sediment (TCEQ), includes a benchmark for Total PCBs. The marine sediment benchmark for PCBs is 0.0227 mg/kg. Table 19 shall be revised to include this benchmark.*

Response: The indicated ecological benchmark will be added to this table.

33. *Comment (Figure 6 and Figure 7): The human health exposure scenario should be consistent on the North and South sides of the Site. Future exposure scenarios on the North side of the facility can not be limited to trespassers. If the property is sold the industrial exposure scenario may apply to this area in the future and therefore shall be addressed in the same manner as the South side of the facility.*

Response: An industrial exposure scenario will be included for the area north of Marlin Avenue.

34. *Comment (Figure 6 and Figure 7): The purpose of the CSM is to describe the pathways that will be evaluated in the risk assessment, not indicate which pathways are indeterminate due to limited data. The CSM shall address both the currently listed completed pathways as well as the indeterminate pathways (as data gaps are filled these pathways shall be evaluated).*

Response: At this stage of the project (RI/FS Work Plan preparation), the purpose of the CSM is to identify those pathways for which additional information is needed before a proper evaluation can be performed. The Work Plan is then crafted to provide this information. The term "indeterminant" is used in Figures 6 and 7 to specifically identify those pathways for which additional information is needed. The RI/FS will collect data to fill those data gaps. Once the data gaps have been filled, the CSM will be re-evaluated and those pathways identified as complete or potentially complete will be evaluated in the risk assessment.

35. *Comment (Figure 6 and Figure 7): Contact with soil shall be one of the primary media of potential exposure (contaminated soil shall be listed as a release mechanism).*

Response: This media and pathway is shown on the bottom line of Figures 6 and 7.

36. *Comment (Figure 6 and Figure 7): The air pathway does not address the potential for vapor intrusion. The CSMs shall be revised to include this.*



Response: As discussed in the February 8, 2006 project meeting, the development of the property north of Marlin Avenue is unlikely considering its classification as a wetland and the costs associated with obtaining the necessary federal permit to impact a wetland and provide mitigation. As such, we do not propose to include the vapor intrusion pathway on Figure 6, which describes the CSM for the North Area. We will revise Figure 7 (the CSM for the South Area) to include this pathway.

37. *Comment (Figure 10): The process flow chart indicates that the initial round of sampling will be scaled back to only those constituents listed as a COI for each area. There are a few areas in which the COI list must be revisited to incorporate earlier recommendations for the suite of constituents to be analyzed. Specifically, discussions during the scoping meetings indicated that the full suite of constituents would be evaluated on a grid pattern in addition to area specific samples looking for specific COI. In areas like the welding area, it does not appear that any grid samples will be collected. This is a fairly large area and therefore shall not be limited to only addressing metals and VOCs. There are other potential historic releases to an area of this size.*

Response: The COI lists for the various PSAs in Table 12 will be revised based on Specific Comment Nos. 22 and 23 above. We suggest that those revisions will address this comment and no changes to Figure 10 are needed.

## FIELD SAMPLING PLAN (FSP) COMMENTS

### General Comments:

1. *Comment:* The southern portion of the Site shall be fully evaluated for ecological risk during the RI/FS by screening sampling data against ecological benchmarks.

Response: The FSP will be revised to reflect this change as discussed previously.

2. *Comment:* The FSP proposes to limit COIs based on previously collected data. COIs shall not be eliminated strictly based on the SSI and other previously collected data. Therefore, it is premature to limit analysis of samples for the welding potential source area (PSA) to metals and VOCs, to limit the electrical shed PSA to PCBs only, and the former gasoline storage tank: PSA to VOCs and metals only. In addition to the proposed samples, these PSAs shall be sampled such that VOC, SVOC, pesticides, PCBs, and metals samples are obtained at locations that are consistent with, and leave no gaps in, the 100-foot grid approach for the southern part of the Site.

Response: The COI list was developed based on site history and usage information detailed in Section 2.2 of the RI/FS Work Plan. In response to previous comments, the COI lists for the welding area and the gasoline storage tank area will be expanded to include VOCs, SVOCs, pesticides, PCBs and metals. Given the small area of the electrical shed PSA, the long time period for which the area was used for this purpose and the fact that the entire PSA fits in a single sample grid as shown on Figure 6 of the RI/FS Work Plan, it is proposed that this comment be addressed by analyzing one of the four samples from this PSA for VOC, SVOCs, pesticides, PCBs, and metals, while analyzing the other three samples for PCBs only.

3. *Comment:* The preceding RI/FS Work Plan comments shall be applied to the draft Sampling and Analysis Plan - FSP as appropriate.

Response: The Sampling and Analysis Plan – FSP will be revised as appropriate based on the

resolution of the preceding RI/FS Work Plan comments.

### **Specific Comments:**

1. *Comment (Section 2.4, page 5): The RI/FS shall look at a broad range of potential constituents prior to narrowing down to a list of Site wide COIs. The term COI implies a narrow list of suspected Site contaminants rather than the broader range of sampling analytes required in this sampling effort. The FSP shall be revised to provide a complete list of COIs. The FSP shall also be revised to use the chemical terms as defined in Risk Assessment Guidance Document for Superfund (RAGS) (i.e., chemicals of potential concern (COPC) and chemicals of concern (COC)).*

Response: With regard to the first part of this comment, the COI lists for the various PSAs in Table 12 of the Work Plan will be revised based on Specific Work Plan Comment Nos. 22 and 23 above. As noted in the response to General FSP Comment No. 2 above, we believe the COI list for the electrical shed PSA is appropriate, given the small size of this area and the long time period for which the area was used for this purpose.

The second part of this comment is related to nomenclature for compounds and how they fall in the investigation and risk assessment process. We believe that the definition of chemical of potential concern (COPC) and chemicals of concern (COC) that we have used in the Work Plan are consistent with EPA's definition. (We will change our terminology from PCOC to COPC in the Work Plan). For COPCs, EPA (1989) defines them as "chemicals that are potentially site-related and whose data are of sufficient quality for use in the quantitative risk assessment". Furthermore, Exhibit 5-1 (of EPA, 1989) identifies a chemical as a COPC after the data evaluation process and indicates that it is used for quantitative risk assessment. That is how we have used the terminology as well. We have added the term chemical of interest (COI) to the Work Plan to provide further clarification and have used it to indicate any compound that will be analyzed for the area, and does not necessarily imply a narrow list of analytes. EPA (1989) does not provide a definition for compounds prior to their being identified for use in the risk assessment. We discussed this terminology with EPA during the scoping meeting and have used it at other Superfund Sites (without any objection from EPA) to better define how a chemical fits into the process and better identify when or how it has been eliminated from the process.

2. *Comment (Section 3.7, page 14-15): As mentioned above in comments on the RI/FS Work Plan, co-located sediment samples and surface water samples shall be taken in the slips and ICWW, including Lot 21.*

Response: As discussed in the response to Specific Work Plan Comment No.16, one composite surface water sample will be collected from each of the four zones within the ICWW adjacent to the Site as shown on Figure 9 from the FSP. Each composite will consist of three sub-samples collected using tubing and a peristaltic pump. One sub-sample will be collected from approximately one foot below the water surface, one sub-sample will be collected from mid-depth of the water column, and one sub-sample will be collected from approximately one foot above the base of the water column. Background surface water samples will be collected in a similar manner.

3. *Comment (Section 3.8 and Section 3.9, page 15-17): The background sediment and fish tissue samples appear to be located next to a barge slip. This is not an appropriate location to establish a background sample as it may detect site related contamination specific to that slip*

area. Samples in the canal shall be taken either northeast or southwest of the barge slip rather than right next to the barge slip (See Figure 10).

**Response:** As discussed in the response to Specific Work Plan Comment No. 17, the proposed background sample area will be relocated approximately 500 feet to the southwest, so that the entrance to the Brazoria County public boat ramp is not included within the background area.

4. *Comment (Section 5.8, page 31): The FSP proposes to homogenize the marsh sediment samples. This mixing of a sample may reduce the VOC concentration due to evaporation. The FSP shall be revised so that samples for VOC analysis will not be homogenized.*

**Response:** This section will be revised to indicate that samples for VOC analysis will not be homogenized.

5. *Comment (Table 2): This table does not provide the chemical analysis planned for the ground water sample from the Former Product Storage Tank Area. The FSP shall be revised to provide this.*

**Response:** This table will be revised to include the chemical analyses for the groundwater sample from the Former Product Storage Tank Area.

6. *Comment (Section 5.7, page 29): The FSP states: "A single surface water sample is proposed for collection at each site." Duplicates of surface water samples are required for QA/QC purposes. The FSP shall be clarified that this will be the case at the Site.*

**Response:** The FSP will be revised to include the following statement at the end of the cited sentence: "...not including QA/QC samples collected at the frequency indicated in the QAPP."

7. *Comment (Appendix B: Method Selection Worksheets): The tables in Appendix B list the COIs for the analysis methods. Octachlorostyrene is not included in the COI lists. According to the Screening Level Ecological Risk Assessment for the Dow Chemical Company Freeport Site, dated June 30, 2005, octachlorostyrene is a SVOC that was detected in the Freeport Site study area and was potentially bioaccumulative in surface water and sediment based on its octanol-water partition coefficient. As Dow is a generator for the Gulfco Site, octachlorostyrene shall be added to the COI lists for SVOCs in soil, surface water, ground water, sediment, and fish tissue (if detected in the sediment).*

**Response:** Octachlorostyrene was primarily present in certain waste streams from the production of some chlorinated aromatic compounds. It is present in products in only very trace amounts. These waste streams were entirely managed at the Dow Freeport site and would not have been shipped off-site via barge or other means. Thus, octachlorostyrene would not be present in the product barges cleaned at the Gulfco facility, and does warrant inclusion in the Gulfco COI lists, as agreed to in the February 8, 2006 meeting.

## QUALITY ASSURANCE PROJECT PLAN (QAPP) COMMENTS

### **General Comment:**

1. *Comment: The preceding RI/FS Work Plan and FSP comments shall be applied to the draft Sampling and Analysis Plan - QAPP as appropriate.*

Response: The Sampling and Analysis Plan – QAPP will be revised as appropriate based on the resolution of the preceding RI/FS Work Plan comments.

### **Specific Comments:**

1. *Comment (Table 1, page 2 of 3): The QAPP states that the horizontal boundaries of the soil study are the properly boundaries and the Intracoastal Waterway, and that the vertical soil boundaries are a depth of 2-feet. The horizontal and vertical boundaries of the soil study shall include the full extent of contamination, to the appropriate screening level, which may extend beyond the property boundaries and deeper than 2-feet bgs. The QAPP shall be revised accordingly.*

Response: The QAPP will be revised as indicated.

2. *Comment (Table 2, page 2 of 2): The QAPP states that the vertical boundary of the ground water study is the base of the uppermost water-bearing unit. The vertical boundary of the ground water study shall include the full extent of contamination, to the appropriate screening level, which may extend below the uppermost water-bearing unit. The QAPP shall be revised accordingly.*

Response: The QAPP will be revised as indicated.

3. *Comment (Appendices A & D; Tables A-2 and D-2): The tables show that no preservation is required for metals analysis of soil/sediment samples. According to "Engineering & Design Requirements for the Preparation of Sampling & Analysis Plans" (EM 200-1-3, 2/1/2001), Table B-I, soil/sediment samples for metals analysis should be preserved by cooling to 4 °C. The QAPP shall be revised to include cooling to 4 °C, unless an acceptable reference can be provided for no preservation of these samples.*

Response: The preservation requirements for metals in the QAPP were taken from Table 3-1 of *Test Methods for Evaluating Solid Waste*, EPA SW-846, 3rd Edition, 1986, Update III (December 1996) since the referenced methods for these analytes are provided in SW-846. Since this reference requires cooling samples for mercury analysis to 4°C, the QAPP will be revised to specify cooling for soil/sediment samples for any metals analysis.

4. *Comment (Appendix & D; Tables A-2 & D-2): The tables shows that the holding time for chromium VI analysis of soil/sediment samples is 30 days (preparation) and 4 days (analysis). According to "Engineering & Design Requirements for the Preparation of Sampling & Analysis Plans" (EM 200-1-3, 2/1/2001), Table B-1, the soil/sediment sample holding time for chromium VI analysis should be 24 hours. The QAPP shall be revised to include a holding time of 24 hours, unless an acceptable reference can be provided for the proposed holding time.*

Response: The reference for the holding times information was also EPA SW-846. As provided therein, the chromium VI holding time is 24 hours for aqueous samples but 30 days to prep/ 4 days to analysis for solids. For this reason, we propose retaining the language in the Draft QAPP.

### **REFERENCES:**

LT Environmental, Inc. (LTE), 1999. Site Characterization Report. Hercules Marine Service Site Freeport, Brazoria County Texas. June.

United States Environment Protection Agency (EPA), 1989. *Risk Assessment Guidance for Superfund (RAGS), Volume I, Human Health Evaluation Manual, Part A*. Office of Emergency and Remedial Response. EPA/540/1-89/002. December.

United States Environmental Protection Agency (EPA), 1995. *Determination of Background Concentrations of Inorganics in Soil and Sediments at Hazardous Waste Sites* (Engineering Forum Issue, EPA 540-S-96-500, December.

United States Environmental Protection Agency (EPA), 1997. *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. Interim Final*. Solid Waste and Emergency Response. OSWER 9285.7-25. EPA 540-R-97-006. June.

United States Environmental Protection Agency (EPA), 2001. *ECO Update. Role of Screening-Level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk Assessments*. Office of Solid Waste and Emergency Response. Publication #9345.0-14. EPA 540/F-01/014. June.

United States Environmental Protection Agency (EPA), 2002. *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites*. Office of Emergency and Remedial Response. EPA 540-R-01-003. OSWER 9285.7-41. September.

United States Environmental Protection Agency (EPA), 2003. *Superfund Lead-Contaminated Residential Sites Handbook*. Office of Emergency and Remedial Response. OSWER 9285.7-50. August.